

PhD Student position in Photonics: *Optical frequency combs for optical communications*

Chalmers University of Technology, Gothenburg, Sweden

Application deadline: 31th May, 2013

Expected starting date: 1st August, 2013

Duration: 4 years

The laboratory

The *Photonics laboratory* at the Microtechnology and Nanoscience Department (MC2) is a dynamic and creative group with about 30 members working in an international and collaborative atmosphere. We perform both curiosity-driven and applied-research in the areas of optoelectronics, nanophotonics, and fiber optic systems. We enjoy a state-of-the-art laboratory for fiber-optic communications and have access to in-house clean-room facilities to manufacture photonic devices engineered at the nanoscale. Part of our recent research efforts focus on *Next-generation optical communication systems* featuring ultra-fast data rates (>1 Tb/s); *Optical fiber amplifiers* with world-record noise figures (1 dB); and ultra-high-repetition-rate (>10 GHz) *optical frequency comb technology*. Please visit: www.chalmers.se/mc2/EN/laboratories/photonics-laboratory/

The project

An optical frequency comb is typically produced by an ultrashort laser pulse train, whose spectrum consists of a series of discrete equidistant lines spanning over a broad bandwidth. The outstanding phase-noise performance of optical frequency combs has revolutionized the fields of optical synthesis and metrology. The applications of this Nobel-Prize-winning technology range from optical clocks to the synthesis of ultra-pure microwave signals.



This project deals with the development of emerging and compact optical frequency comb technology at ultra-high-repetition rates (10-100 GHz) and the study of its suitability for applications in optical communication systems. We will explore two main platforms, i.e., electro-optic frequency comb generators and integrated silicon nitride microring resonators.

Job description

The work is 50% experimental and 40% numerical modeling. It involves testing of chip devices, development of electro-optic comb generators and realization of applications. You will also have room to contribute with your own ideas. The majority of your working time is devoted to your own research project. In addition, the position will normally include 10% departmental work, mostly teaching duties. The starting gross salary is 26,250 SEK/month.

Qualifications

By the incorporation date, the applicant should have a Master's degree (or equivalent) in Applied Physics, Engineering Physics, Electrical Engineering or similar, with specialization in photonics. Experience with silicon photonics/ultrafast optics/optical communications/ is a merit. **You must be fluent in English.**

Application material

For electronic submission, go to www.chalmers.se and click on vacancies (at the bottom of the page).

For more information, please contact

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